Claims

1. A radar level gauge having a defined range resolution comprising:
an antenna, an electronics unit, a waveguide feed between the electronics unit and the antenna;
wherein said waveguide is essentially straight and has a 90°-symmetric cross section and is arranged to accommodate two essentially orthogonal waveguide modes; said waveguide further having a length below two times said range resolution of said radar level gauge.

2. The radar level gauge (1) of claim 1,
further comprising a tank sealing,
wherein said waveguide feed is provided with a waveguide joint enabling said electronics unit to be detached from and attached to said antenna with said tank sealing providing maintained sealing.

3. The radar level gauge (1) of claim 1,
wherein said two essentially orthogonal waveguide modes are LHCP (Left Hand Circular Polarization) and RHCP (Right Hand Circular Polarization).

4. The radar level gauge (1) of claim 2,
wherein said two essentially orthogonal waveguide modes are LHCP (Left Hand Circular Polarization) and RHCP (Right Hand Circular Polarization).

5. The radar level gauge (1) of claim 1,
wherein a waveguide feed, an arrangement for obtaining said two essentially orthogonal waveguide modes and microwave transmitter and receiver circuits are arranged on the same Printed Circuit Board of said electronics unit.

6. The radar level gauge (1) of claim 2,
wherein a waveguide feed, an arrangement for obtaining said two essentially orthogonal waveguide modes and microwave transmitter and receiver circuits are arranged on the same Printed Circuit Board of said electronics unit.

7. The radar level gauge (1) of claim 3,
wherein a waveguide feed, an arrangement for obtaining said two essentially orthogonal waveguide modes and microwave transmitter and receiver circuits are arranged on the same Printed Circuit Board of said electronics unit.

8. The radar level gauge (1) of claim 4,
wherein a waveguide feed, an arrangement for obtaining said two essentially orthogonal waveguide modes and microwave transmitter and receiver circuits are arranged on the same Printed Circuit Board of said electronics unit.

9. The radar level gauge (1) of any one of claims 1 to 8,
wherein said antenna and said tank sealing comprises a horn antenna having a 90°-symmetric cross section which is sealed by a dielectric material filling at least part thereof along said waveguide.

10. A method for improved radar level gauging using a radar level gauge having a defined range resolution, said radar level gauge comprising an antenna, an electronics unit, a waveguide feed between the electronics unit and the antenna, the method comprising the steps of:,
providing as said waveguide feed an essentially straight waveguide having a 90°-symmetric cross section;
arranging said waveguide to accommodate two essentially orthogonal waveguide modes;
giving said waveguide a length below two times said range resolution of said radar level gauge.

11. The method of claim 11, further comprising the steps of;
providing a tank sealing, and
providing said waveguide feed with a waveguide joint enabling said electronics unit to be detached from and attached to said antenna with said tank sealing providing maintained sealing.

12. The method of claim 10, further comprising the step of;
arranging said waveguide to accommodate as said two essentially orthogonal waveguide modes LHCP (Left Hand Circular Polarization) and RHCP (Right Hand Circular Polarization).

13. The method of claim 11, further comprising the step of;
arranging said waveguide to accommodate as said two essentially orthogonal waveguide modes LHCP (Left Hand Circular Polarization) and RHCP (Right Hand Circular Polarization).

14. The method of claim 10, further comprising the steps of;
arranging a waveguide feed, an arrangement for obtaining said two essentially

orthogonal waveguide modes and microwave transmitter and receiver circuits on the same Printed Circuit Board of said electronics unit.

15. The method of claim 11, further comprising the steps of;
arranging a waveguide feed, an arrangement for obtaining said two essentially orthogonal waveguide modes and microwave transmitter and receiver circuits on the same Printed Circuit Board of said electronics unit.

16. The method of claim 12, further comprising the steps of;
arranging a waveguide feed, an arrangement for obtaining said two essentially orthogonal waveguide modes and microwave transmitter and receiver circuits on the same Printed Circuit Board of said electronics unit.

17. The method of claim 13, further comprising the steps of;
arranging a waveguide feed, an arrangement for obtaining said two essentially orthogonal waveguide modes and microwave transmitter and receiver circuits on the same Printed Circuit Board of said electronics unit.

18. The method of any one of claims 10 to 17, further comprising the steps of;
providing as said antenna a horn antenna having a 90°-symmetric cross section;
providing as and said tank sealing a dielectric material filling at least part of said horn antenna along said waveguide.

19. A radar level gauging system, comprising at least one radar level gauge according to any one of claims 1 to 9;